

Claims

- [c1] 1. An heat insulation pedestal for a furnace tube, comprising:
a top support having an annular base and a reinforced structure, wherein the reinforced structure and the annular base are joined together such that the top support has a structural strength greater than the annular base;
a plurality of heat insulation plates set up under the top support; and
a plurality of connection sections connecting various heat insulation plates and the top support with one of the heat insulation plates.
- [c2] 2. The pedestal of claim 1, wherein the annular base and the reinforced structure of top support are formed together as an integrated unit.
- [c3] 3. The pedestal of claim 1, wherein the annular base and the reinforced structure together form a drum shape top support.
- [c4] 4. The pedestal of claim 1, wherein the annular base and the reinforced structure together form a cylinder shape top support.

- [c5] 5. The pedestal of claim 1, wherein the heat insulation plates, the top support and the connection sections are all fabricated using an identical material.
- [c6] 6. The pedestal of claim 1, wherein material constituting the heat insulation plates comprises quartz.
- [c7] 7. The pedestal of claim 1, wherein material constituting the top support comprises quartz.
- [c8] 8. The pedestal of claim 1, wherein material constituting the connection sections comprises quartz.
- [c9] 9. A vertical type furnace tube, comprising:
an outer tube;
an inner tube set up within the outer tube;
a wafer boat set up within the inner tube; and
a heat insulation pedestal set up inside the inner tube under the wafer boat, wherein the heat insulation pedestal further comprises:
a top support for supporting the wafer boat, wherein the top support comprises an annular base and a reinforced structure joined together such that the top support has an overall structural strength greater than the annular base;
a plurality of heat insulation plates set up under the top support; and

a plurality of connection sections connecting various heat insulation plates and the top support to one of the heat insulation plates.

- [c10] 10. The furnace tube of claim 9, wherein the annular base and the reinforced structure of the top support are fabricated together to form an integrated unit.
- [c11] 11. The furnace tube of claim 9, wherein the annular base and the reinforced structure together form a drum shape top support.
- [c12] 12. The furnace tube of claim 9, wherein the annular base and the reinforced structure together form a cylinder shaped top support.
- [c13] 13. The furnace tube of claim 9, wherein the heat insulation plates, the top support and the connection sections are all fabricated using an identical material.
- [c14] 14. The furnace tube of claim 9, wherein the furnace tube further comprises a wafer boat holder located between the wafer boat and the heat insulation pedestal.
- [c15] 15. The furnace tube of claim 14, wherein material constituting the wafer boat holder comprises silicon carbide.
- [c16] 16. The furnace tube of claim 9, wherein the furnace tube further comprises:

a elevating device set up under the heat insulation pedestal for moving the wafer boat into and out of the inner tube;

a shutter set up outside the inner tube for sealing the inner tube before performing a thermal operation;

a heating element set up around the outer tube for heating the outer tube; and

a thermocouple set up inside the inner tube for measuring ambient temperature.

[c17] 17. The furnace tube of claim 9, wherein material constituting the wafer boat comprises silicon carbide.

[c18] 18. The furnace tube of claim 9, wherein material constituting the heat insulation pedestal comprises quartz.